IDeAs Z2 Design Facility, San Jose (Credit: David Wakely)

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Introduction to Reach Codes in San José

May 29, 2019

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Agenda

- Introductions
- Goals and Big Picture
- What is a Reach Code
- San José Reach Code Development Process
- Discussion/Feedback
- Wrap Up/Next Steps

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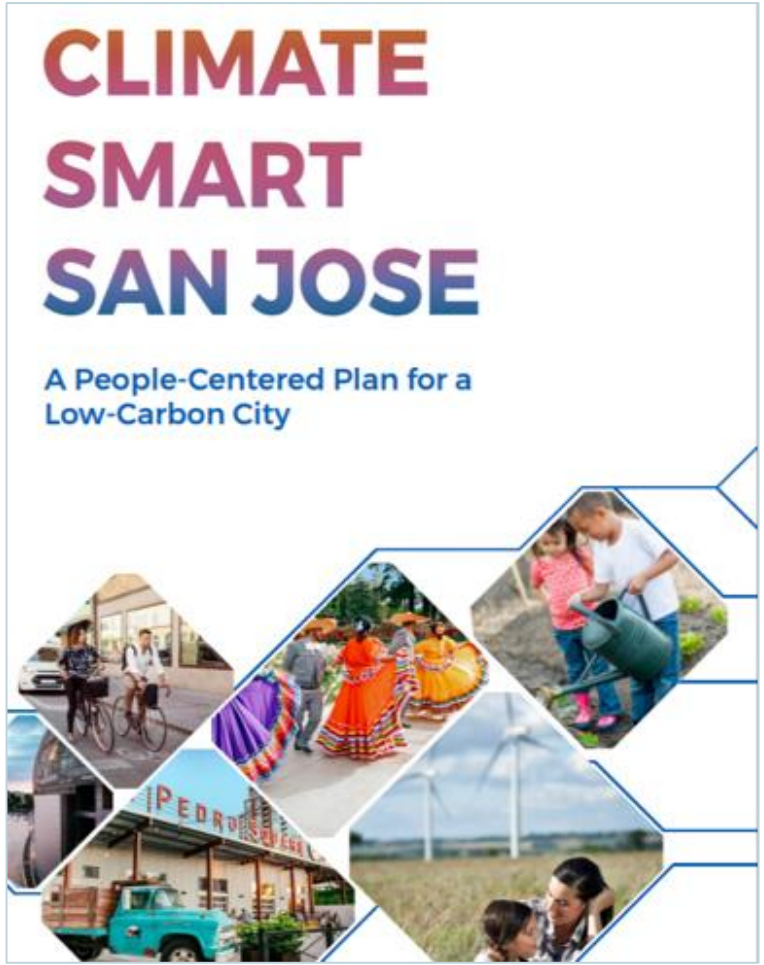
Why is San José Pursuing a Reach Code?

- Aligns with Climate Smart 2030 goals:
  - All-electric homes: 47%
  - Zero net carbon (ZNC) homes: 37,975
  - ZNC commercial buildings: 70M sq. ft.
  - EVs: 61%
  - Solar: 668 MW
- Results in cost-effective, safer, and healthier buildings
- Preempts future retrofitting costs
- Pathway for significant emissions reductions



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San José Context – New Construction Growth

Significant growth expected in building stock in 2020 alone:

- 350 single-family units
- 2400 multi-family units
- 2.4M sq. ft. of commercial/ industrial

*source: PBCE's Development Activity Highlights and Five Year Forecasts (2020-2024), FY 19-20 projections, prepared in Feb. 2019

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San José Context – Carbon Impact of Growth

Building Type	Sq. Ft.	CO2/ Yr.		Units/ Yr.		Years in Service		Years in Code Cycle		Total CO2
Single- Family	2,700	2 tons	X	350	X	50	X	3	=	**105,000 tons**
Multi-Family	1,000	1 ton	X	2400	X	50	X	3	=	**360,000 tons**
Commercial/ Industrial	100,000	120 tons	X	24	X	50	X	3	=	**432,000 tons**
										1.7 trillion car miles

Courtesy TRC, PSE & SVCE

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San José Context - Buildings

- Building design today impacts emissions and costs tomorrow
- San Jose is already one of the highest cost housing markets
- All-electric buildings are already being built in the Bay Area at cost-competitive levels
- A reach code would align with San José's goals around health, safety, cost-effectiveness, and GHG emissions reduction.

All electric multi-family building, Mountain View CA

All electric multi-family building serving low-income community, Sunnyvale CA

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San José Context - Solar

- San José is 3rd in the nation in per capita solar PV installed
- San Jose 2018 installed: 168 MW
- San Jose 2030 goal: 668 MW

- Reach code for commercial new construction would align solar infrastructure with San José's goals, high rate of adoption, and reduces future retrofit costs.

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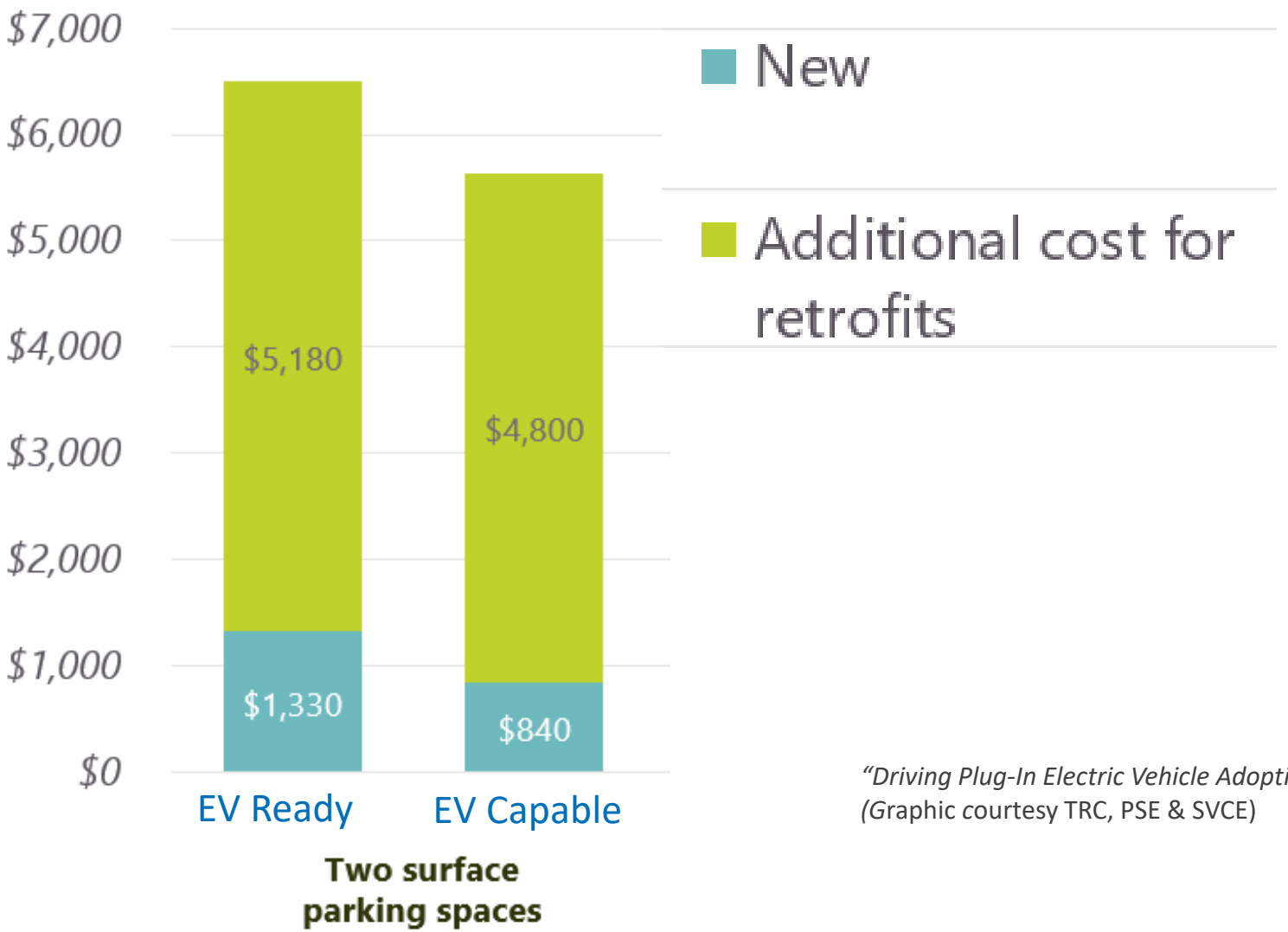
EV Charging Infrastructure – Cost of New vs. Retrofit



"Driving Plug-In Electric Vehicle Adoption with Green Building Codes" by Energy Solutions, PG&E, ARB. (Graphic courtesy TRC, PSE & SVCE)

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San José Context - Electric Vehicles

- San José has the highest share of EV sales in the U.S: over 13,000
- San José only at about 25% of charging infrastructure needs projected for 2025
- A reach code would align with San José's EV infrastructure goals

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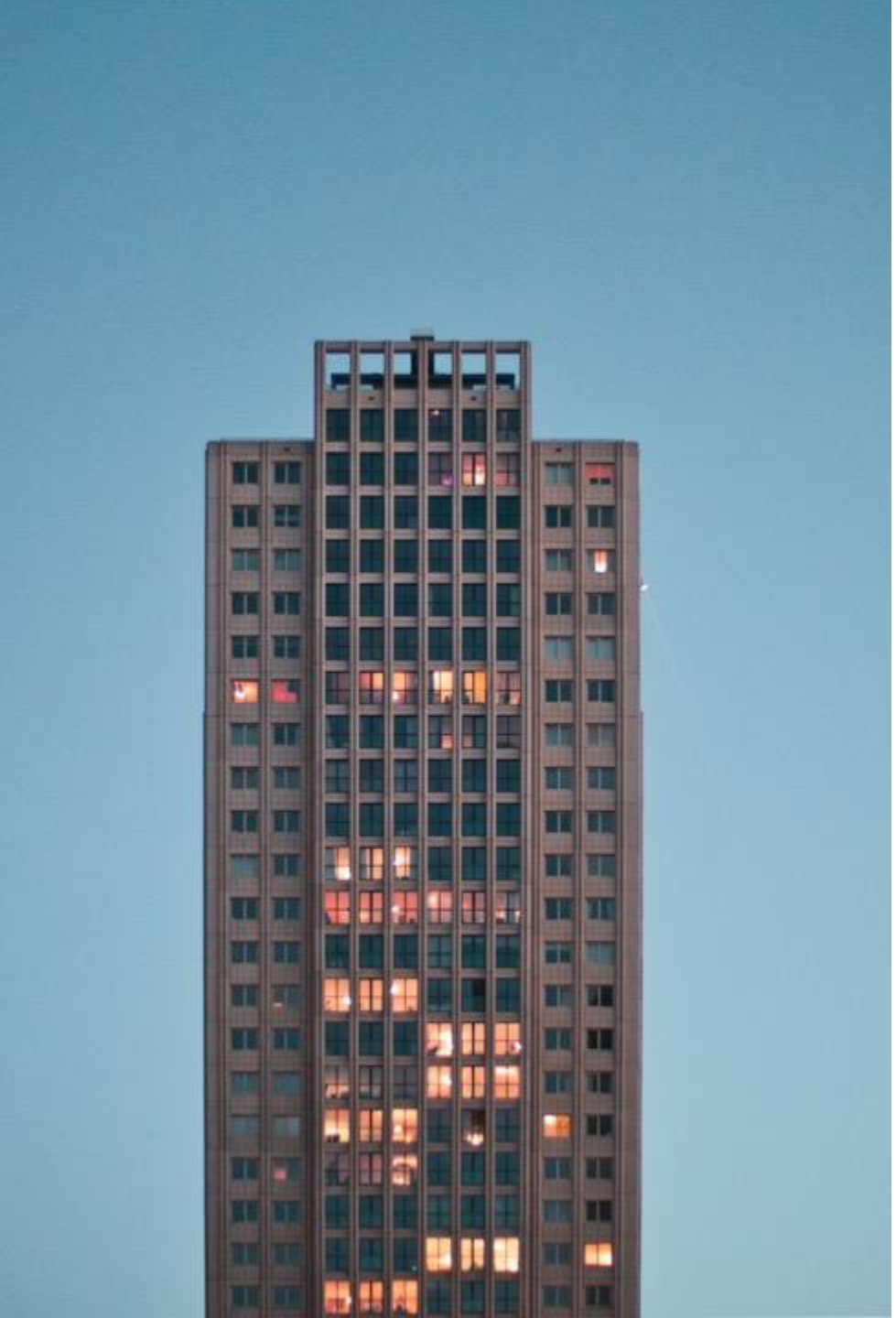

What is a Reach Code?

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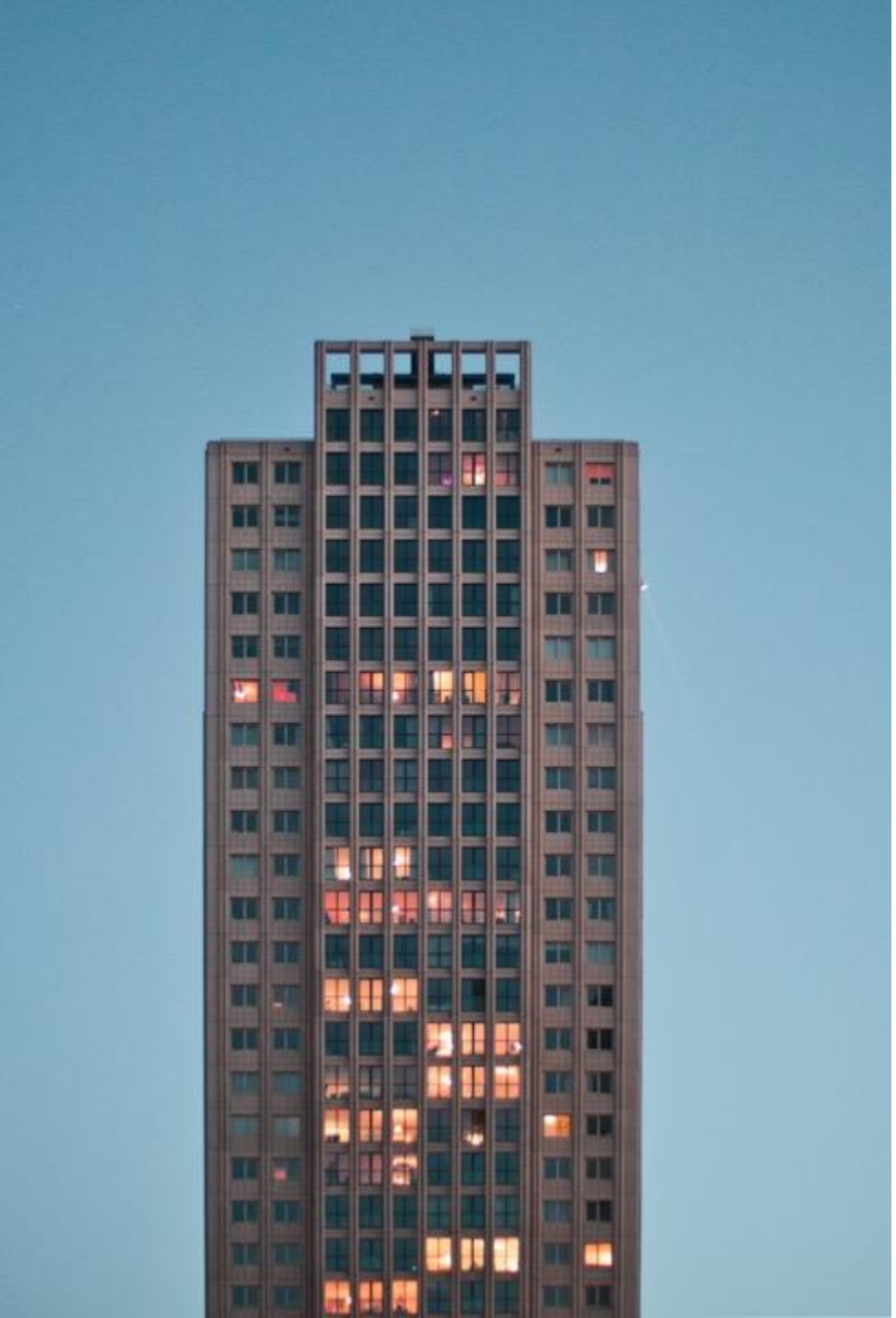

Minimum Base Codes

Set minimum levels of efficiency for building design and construction

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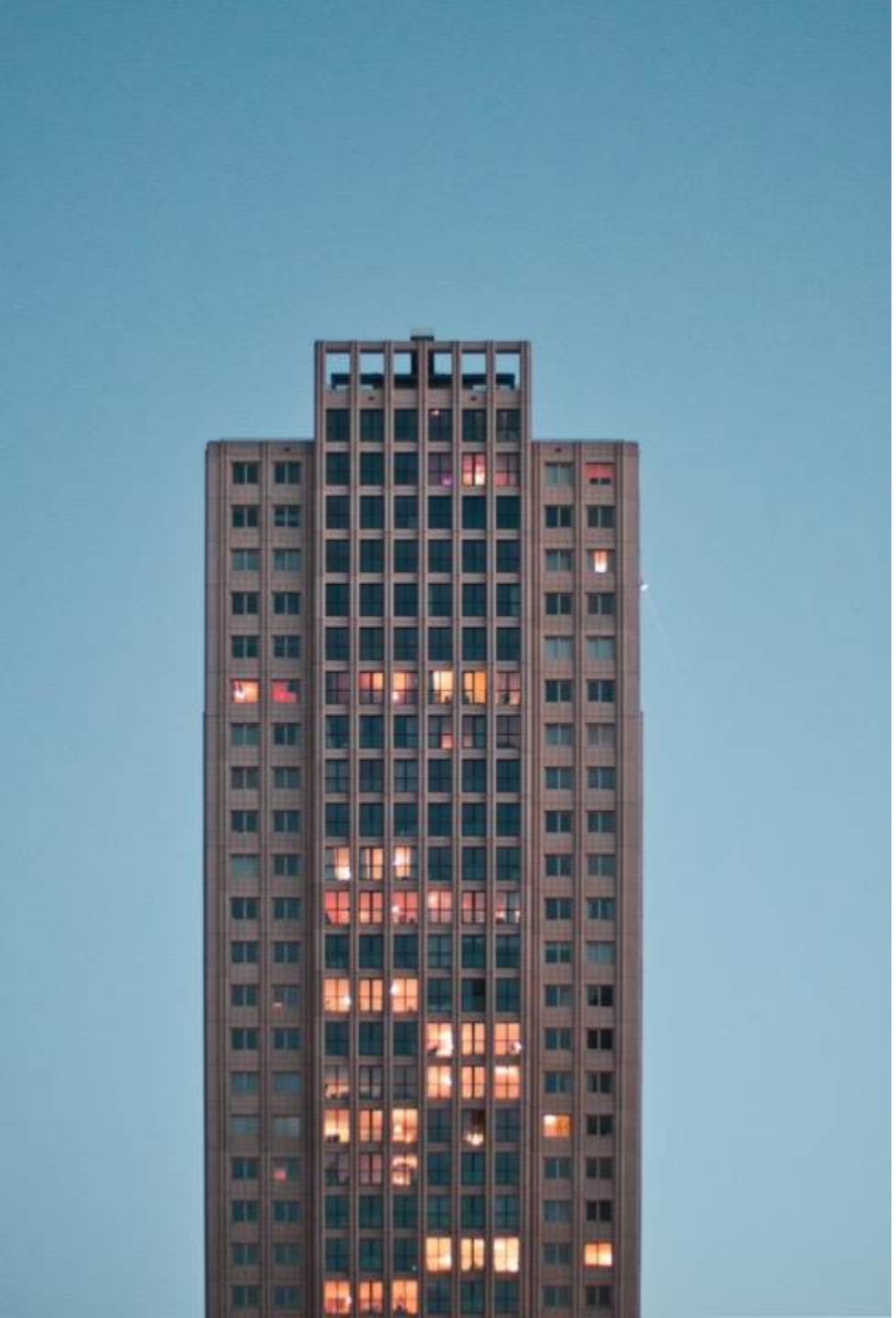

Minimum Base Codes

TITLE 24

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What is in Title 24 - 2019

Residential

- PV sized to cover all non-HVAC equipment (prescriptive path)
- Solar readiness for all homes without PV
- Pre-wiring of all homes for future electric heat water heater
- Require EV Capable

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What is in Title 24 - 2019

Commercial

- Solar readiness for low-rise, non-healthcare buildings
- Require that a portion of total parking spaces be EV Capable

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What is a Reach Code?

- Overlays the base code
- Includes additional requirements, such as:
  - Energy Efficiency
  - Water Efficiency
  - Renewable Energy
  - EV Charging
  - Electrification

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Reach Code Adoption Process

- City Explores Reach Codes
- Evaluate Reach Code Options
- Engage Stakeholders
- Develop Reach Code Ordinance
- Submit Documentation (including Cost Effectiveness studies) to California Energy Commission
- Approve Reach Code through Local Commissions/Councils

City		Measures
Alameda County	2018	Solar PV
City of Brisbane	2017	Cool Roof, Solar PV
City of Chula Vista	2018	Outdoor Lighting
City of Del Mar	2018	Energy Efficiency
City of Davis	2017	Energy Efficiency, Solar PV
City of Fremont	2017	Lighting, Solar PV
City of Healdsburg	2017	Energy Efficiency
City of Lancaster	2018	Solar PV
Marin County	2017/8	Energy Efficiency
Mill Valley	2017	Energy Efficiency
City of Novato	2017	Energy Efficiency
City of Palo Alto	2016	Energy Efficiency, Solar PV, EV
Town of Portola Valley	2017	Energy Efficiency
City of San Francisco	2016	Solar PV or Solar Thermal
City of San Mateo	2016	Cool Roofs, Solar

Courtesy TRC, PSE & SVCE

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Reach Code Regional Effort

NRDC
NATURAL RESOURCES DEFENSE COUNCIL

PENINSULA CLEAN ENERGY

DNV·GL

BUILDING DECARBONIZATION COALITION

EAST BAY COMMUNITY ENERGY

TRC
Results you can rely on

BAYREN

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SILICON VALLEY CLEAN ENERGY

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Reach Code Format Ideas

Solar options for commercial only	EVCI options for different sectors	Require all-electric	Increased efficiency for mixed fuel and code for all electric	CALGreen Tier 1 for residential mixed fuel and code for electric	CALGreen Tier 2 for commercial mixed fuel and code for all electric + one cost effective option

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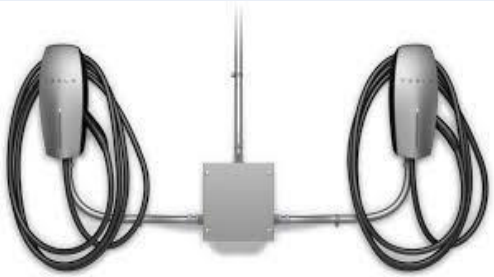
Electric Vehicle Charging Infrastructure (EVCI)

Level 1		15-20 Amp, 120v AC (standard household outlet) Driving Distance provided: 3-4 miles/hour
Level 2		40+ Amp, 208/240v AC Driving Distance provided: 25-30 miles/hour
DC Fast Charge		80-400 Amp, 200-600v DC Driving Distance provided: 125-1000 miles/hour

Courtesy TRC, PSE & SVCE

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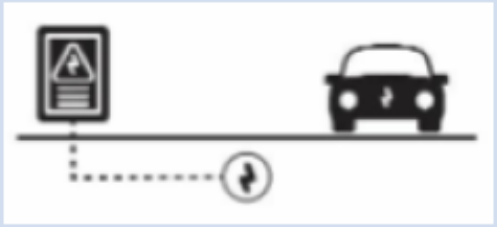
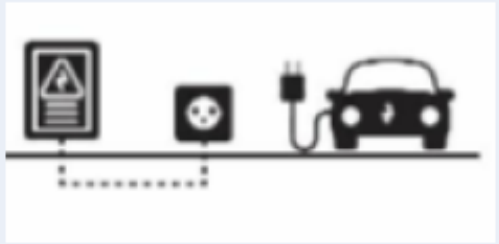
EVCI Definitions

EV Capable *(Some assembly required)*		Raceway (conduit), electrical capacity (breaker space)
EV Ready *(Plug & Play)*		Raceway (conduit), electrical service capacity, overcurrent protection devices, wire and outlet (i.e. full circuit)
EV Supply Equipment (EVSE) Installed *(Level 2 Charge!)*		All the equipment needed to deliver electrical energy from an electricity source to the EV

Courtesy TRC, PSE & SVCE

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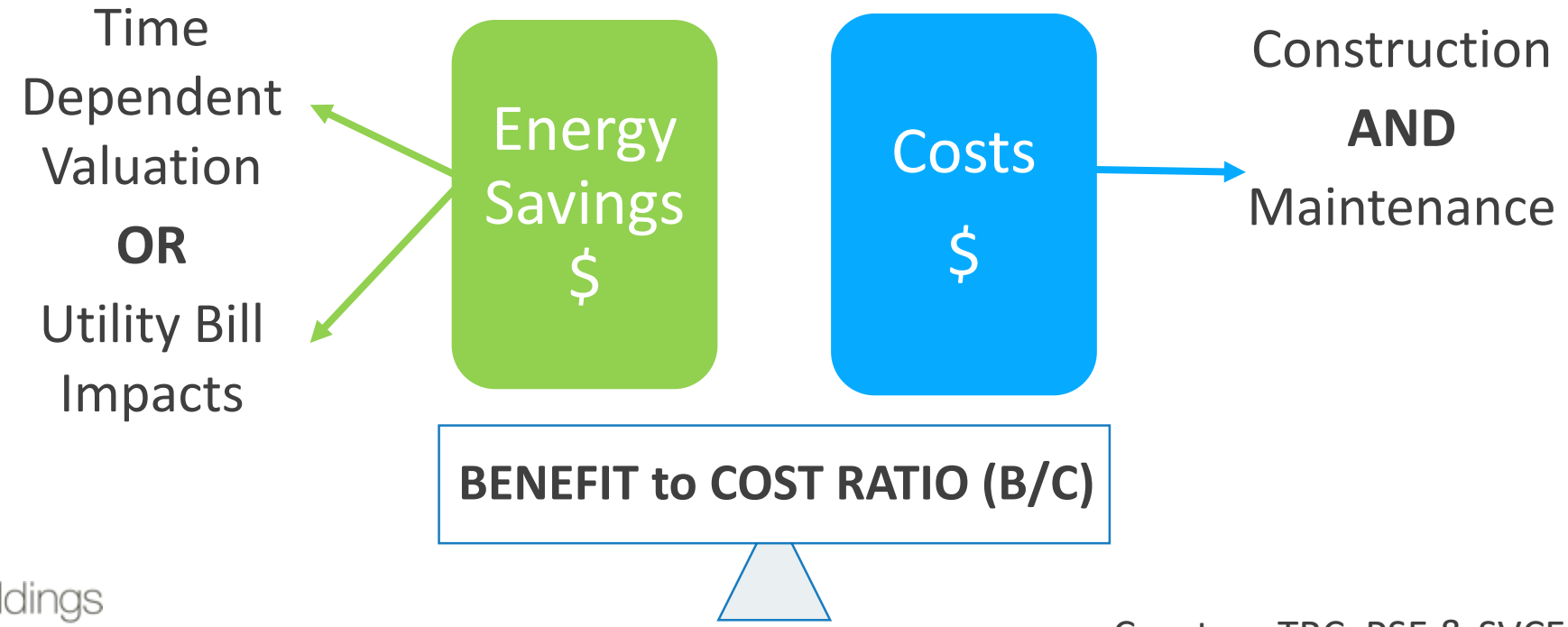
Determining Cost Effectiveness

- Energy savings determined through building simulations
- Costs derived from local experts and online resources
- 30-year or 15-year net present value



Courtesy TRC, PSE & SVCE

CALGreen

Residential

- Tier 1: EDR of 15
- Tier 2: EDR of 6

Commercial

- Tier 1: 90% of T24
- Tier 2: 85% of T24

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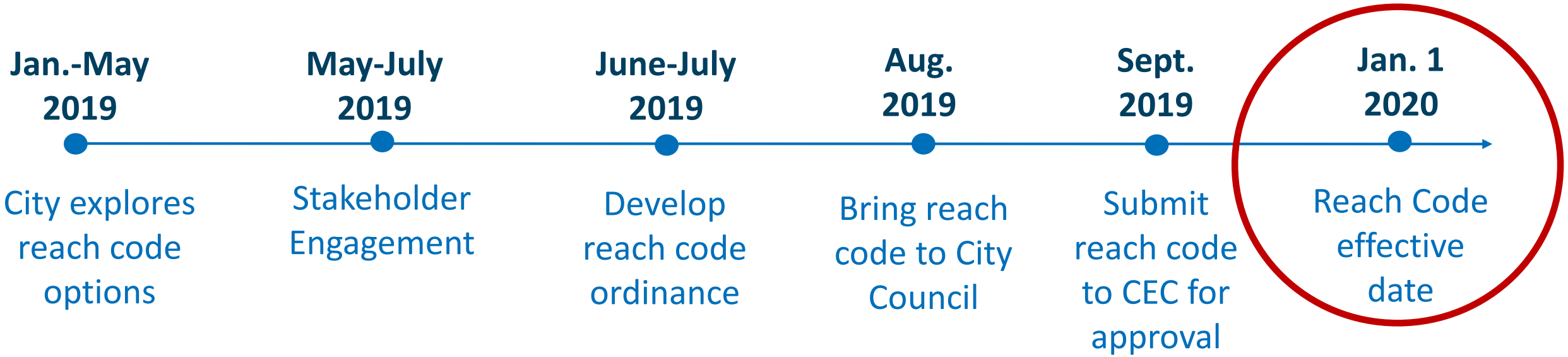
San José Reach Code Development Process & Timeline



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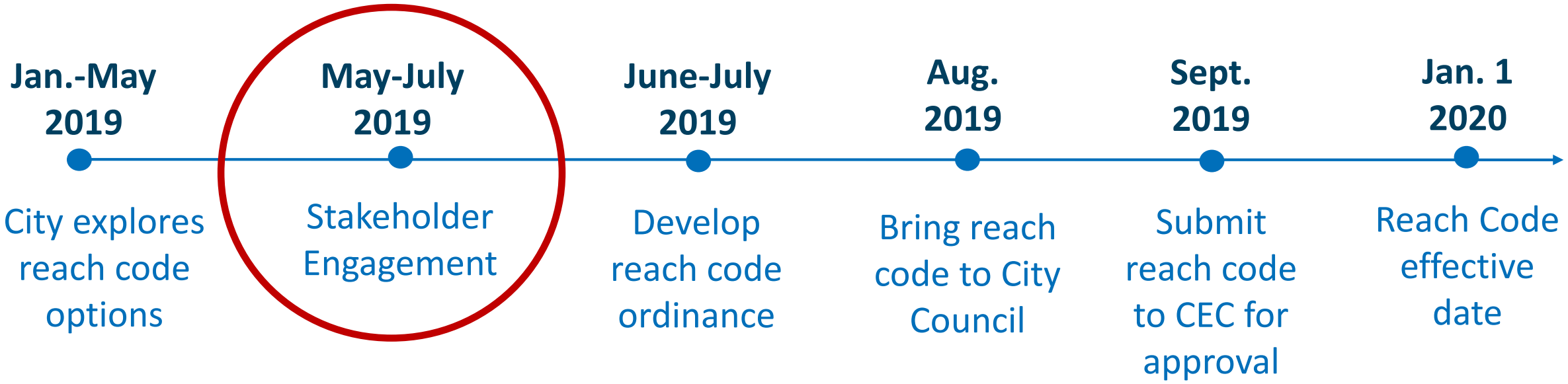

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San José Reach Code Stakeholder Meetings

Goal: Solicit input from those that will be impacted by the adoption of a reach code including:

- Designers
- Enforcement
- Developers
- Contractors
- Residents
- Advocates
- Others

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San José Reach Code Stakeholder Meetings

Initial Feedback

Commercial

Residential

Final Input

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Discussion and Feedback

- **Objectives:** Further building electrification, EVCI, and solar PV installation for new construction in San José
- **Regional Draft Models:**
  - Fully electric buildings -> meet Title 24
  - Mixed fuel buildings -> % above Title 24 or CALGreen mandatory measures
  - EVCI extended to EV ready or capable, depending on sector

Starter Questions

- What are your thoughts around San José's development of an electrification, solar, and/or EV infrastructure reach code?
- Do you think that any regional draft models would be appropriate for San Jose?

Next Steps

Upcoming Stakeholder Meetings:

- June 4 – Commercial New Construction Focus
- June 25 – Residential New Construction Focus
- July 10 – Final Reach Code Input

Contact Information:

- energy@sanjoseca.gov
- City Reach Code Webpage: http://www.sanjoseca.gov/index.aspx?NID=6357

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